

# BLUEPRINT

California Energy Commission  
Efficiency Division

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## 2019 Energy Standards Development

Even though the *2016 Building Energy Efficiency Standards* (Energy Standards) just took effect, planning for the 2019 Energy Standards

is already in progress. The Statewide Utility Codes and Standards Team (Utility Team) is a group of representatives from publicly and privately owned utilities that supports the California Energy Commission (Energy Commission) with revising the Energy Standards. The goal is to achieve energy savings through reasonable and cost-effective changes to the Energy Standards.

The evaluation by the Utility Team is one part of the 2019 Energy Standards development process. The Energy Commission will be hosting workshops to propose and evaluate additional requirements including residential photovoltaics (PV).

The **proposed requirements** being evaluated by the Utility Team for the 2019 Energy Standards affect:

- » Nonresidential lighting
- » Residential and nonresidential heating, ventilation, and air conditioning (HVAC)
- » Residential and nonresidential indoor air quality and ventilation
- » Residential and nonresidential demand response
- » Residential water heating
- » Residential and nonresidential envelope
- » Process

The Utility Team is hosting a series of **webinars** throughout March. Each webinar covers a specific topic related to the proposed changes. Public participation is welcome and encour-

aged. These webinars provide an opportunity to share input on the proposed recommendations to the Energy Commission. The **agendas and presentations** for each webinar are posted. **Sign up** for an invite to attend the webinars and to stay informed about the utility-sponsored outreach process.

For more information, contact the Utility Team at:  
Email: [info@title24stakeholders.com](mailto:info@title24stakeholders.com)

## 2016 Energy Standards are in Effect

The 2016 Energy Standards went into effect on January 1, 2017. Permit applications submitted on or after this date must meet the requirements of the 2016 Energy Standards.

Many great resources are available to help with implementation, including:

- » **Online Resource Center**
- » **Energy Standards Hotline**
- » **Quick Linked TABLE 100.0-A**
- » **2016 Residential and Nonresidential Compliance Manuals**
- » **2016 Compliance Software**
- » **2016 Low-Rise Residential Mandatory Measures Summary**

## 2016 Compliance Software

The Energy Commission has approved several compliance software programs for the 2016 Energy Standards.

For residential buildings, the following programs are approved:

- » CBECC-Res
- » EnergyPro
- » Right-Energy Title 24

For nonresidential buildings, the following programs are approved:

- » CBECC-Com
- » EnergyPro
- » IES Virtual Environment

The list of approved software versions and their corresponding approval and expiration dates is available on the **compliance software** web page.

## Open Source Software

CBECC software is now open source. This makes all of the source code of one of the world's most advanced building modeling software programs available to the public for free. Other entities can now alter the source code to help meet their energy efficiency goals.

CBECC software is a free computer program developed by the Energy Commission. This software is used to demonstrate compliance with the Energy Standards.

The open source project is available at:  
<https://github.com/CBECC-software/cbecc>

The screenshot shows the California Energy Commission website. The header includes the CA.GOV logo, the California Energy Commission name, and navigation links: Home, About Us, Analysis & Stats, Efficiency, Funding, Power Plants, Renewables, Research, and Transportation. A search bar is also present. The main content area is titled "2016 Building Energy Efficiency Standards Approved Computer Compliance Programs". It states that the California Energy Commission has approved the following energy analysis computer programs that include all Alternative Calculation Methods approved for the 2016 Building Energy Efficiency Standards (2016 Energy Standards) in accordance with the California Code of Regulations: Title 24, Part 1, Article 1, Section 10-109. It lists individual programs under specific categories, authorized for use under the performance approach (energy budget) method of compliance for the 2016 Energy Standards. A note mentions that price listings of proprietary programs are available from vendors at addresses and telephone numbers listed. Below this is a table titled "Residential Buildings, 2016 Standards".

Program Name	Approved versions usable for permit	Contact Information	Additional Information
CBECC-Res	CBECC-Res 2016.2.1 (868) was approved 9/14/2016 for demonstrating performance compliance with the residential provisions of the 2016 California Building Energy Efficiency Standards (effective date January 1, 2017). When demonstrating compliance with the 2016 standards, CBECC-Res 2016.2.1 must	California Energy Commission Building Standards Office 1516 9th Street, MS 37 Sacramento, CA 95814 ATTN: Dee Anne Ross	<a href="#">CBECC-Res Website</a> <a href="#">FAQ</a> <a href="#">Approval/Expiration Dates</a>

## 2016 HERS Providers

The Energy Commission has approved CalCERTS and CHEERS as Home Energy Rating System (HERS) providers for the 2016 Energy Standards.

CalCERTS, Inc. is approved to train and certify HERS raters for:

- » Field verification and diagnostic testing for newly constructed and additions to residential buildings.
- » Field verification and diagnostic testing for alterations of residential and nonresidential buildings.
- » California whole-house home energy ratings.

CalCERTS may be reached at:

Email: [info@calcerts.com](mailto:info@calcerts.com)  
Phone: (877) 437-7787

CHEERS is approved to train and certify HERS raters for:

- » Field verification and diagnostic testing for newly constructed and additions to residential buildings.
- » Field verification and diagnostic testing for alterations of residential buildings.

CHEERS may be reached at:

Email: [info@CHEERS.org](mailto:info@CHEERS.org)  
Phone: (800) 424-3377

HERS providers are approved based upon several factors, including their ability to:

- » Train and certify HERS raters.
- » Create and maintain a registry and database.
- » Provide ongoing access to their registry and database for Energy Commission staff.
- » Create a quality assurance program and conduct quality assurance inspections on their HERS raters' work.
- » Report annually to the Energy Commission as required by Title 20.

For more information, please visit the **HERS program** web page.

## 2016 HERS Reference Card Now Available

The Energy Commission has released the **2016 HERS reference card**. This card is designed to help quickly identify when HERS verification is required and how to find approved providers. A preview of the new HERS card is provided in Figure 1.

## 2016 Compliance Document Upgrades

The **2016 compliance documents** for residential projects that do not require HERS verification have been upgraded. Some of the new features include:

- » Improved compatibility with free PDF viewers
- » Saving has been enabled
- » **Digital signatures** have been incorporated

The selection of documents for projects that do not require HERS verification has also been expanded. These documents were previously only available through a HERS registry. The newly available documents include:

- » Pool and spa heating systems
- » Solar water heating systems
- » Whole house fans

These documents do not have watermarks and do not require registration with a HERS provider.

NOTE: All compliance documents for a project must be registered with a HERS provider if HERS verification is required or modeled for compliance credit.

## Lighting ATTCP Training Approved for the 2016 Energy Standards

The Energy Commission has approved the California Advanced Lighting Controls Training Program's (CALCTP) nonresidential lighting controls Acceptance Test Technician Certification Provider (ATTCP) application updates for

the 2016 Energy Standards. CALCTP can now train, certify, and recertify lighting controls acceptance test technicians (ATTs) and their employers under the 2016 Energy Standards.

For more information, visit the **ATTCP** web page.

## Training Opportunities

Did you know that the utilities provide free Energy Standards training? These opportunities are available throughout the state. Training schedules are now conveniently listed on the Energy Commission's **Utility Sponsored Training Schedules** web page.

Training sessions are offered in a variety of formats, including in person, live webinar, and on demand. It is likely there is a session that fits your schedule.

Be sure to check back often as schedules are updated regularly.

NOTE: Opportunities offered by investor-owned utilities are listed jointly through Energy Code Ace. Opportunities provided through publicly owned utilities are listed individually.

**When is HERS testing/verification required?**

- **Home Energy Rating System (HERS)** testing is mandatory for all newly constructed buildings, and is prescriptively required for most HVAC alterations.
- Some mechanical, envelope, and water heating systems require HERS testing when modeled for compliance credit under the performance approach.
- Any HERS testing that is required for a project will be specified on the CF1R.

**Who can conduct HERS Testing?**

- Only a HERS Rater who is certified by a HERS Provider may perform HERS testing required under the Energy Standards.
- A HERS Rater can be certified to complete HERS testing for new construction (including additions) and/or alteration projects.

**How do I find a HERS Rater?**

- HERS Providers approved by the Energy Commission maintain a directory of certified HERS Raters on their respective websites (provided on the back of this card).
- Search filters, like project type and county, are available to make finding a HERS Rater in your area easier.

NOTE: Duct leakage testing by a HERS Rater is prescriptively required for smaller nonresidential HVAC systems (see § 140.4 (l)).



**RESIDENTIAL**

**HERS TESTING**

For the 2016 Energy Standards



CALIFORNIA ENERGY COMMISSION

Figure 1 - 2016 HERS Reference Card

## Q&A

### Sun Rooms

The **2016 California Residential Code (CRC)** introduced sunroom categories. One of these sunrooms, a **Category IV**, is conditioned but non-habitable. Are **Category IV sunrooms** subject to the requirements of the Energy Standards?

Yes. **Section 100.0(c)1** requires all conditioned space in a story to comply with the Energy Standards. The requirements of the Energy Standards apply regardless of the space being habitable or non-habitable.

**Section R301.2.1.1.1** of the CRC defines Category IV sunrooms as:

*“A thermally isolated sunroom with enclosed walls. The sunroom is designed to be heated or cooled by a separate temperature control or system and is thermally isolated from the primary structure...”*

Category IV sunrooms are **directly conditioned** if they are provided with mechanical heating exceeding 10 Btu/hr-ft<sup>2</sup> or mechanical cooling exceeding 5 Btu/hr-ft<sup>2</sup>. Sunrooms meeting this definition must meet all applicable requirements, including:

- » Envelope
- » Lighting
- » Mechanical
- » Solar ready
- » Water heating

### Buildings and Spaces Used for Commercial Plant Growth

Are buildings and spaces used for commercial plant growth regulated by the Energy Standards?

Yes. These buildings and spaces are within the scope of the Energy Standards, and the nonresidential requirements apply.

**What requirements must be met if the building or space used for commercial plant growth is conditioned?**

Directly and **indirectly conditioned** spaces must meet all applicable requirements, including:

- |                      |                 |
|----------------------|-----------------|
| » Envelope           | » Mechanical    |
| » Lighting           | » Solar ready   |
| » Power distribution | » Water heating |

**Are buildings or spaces used for commercial plant growth that use only an evaporative cooler (swamp cooler) for space conditioning subject to any requirements of the Energy Standards?**

Yes. These buildings and spaces must meet all of the applicable requirements for unconditioned nonresidential buildings, which primarily consists of lighting and power distribution requirements. Cooling of a space by direct or indirect evaporation of water alone is not considered **mechanical cooling**.

**Do grow lights in buildings and spaces used for commercial plant growth have to meet the prescriptive lighting power allowance requirements of Section 140.6?**

Yes. **Section 140.6(a)** requires the total watts of all permanent and portable lighting systems be used to calculate the actual indoor lighting power. However, **Section 140.6(a)3G** excludes the lighting wattage of grow lights if they are controlled by a multi-level astronomical time-switch control.

The multi-level astronomical time-switch control must be listed in the **Appliance Efficiency Database**.

Grow lights are still subject to the applicable mandatory indoor lighting requirements, including:

- » General lighting (**Section 130.0**)
- » Indoor lighting controls (**Section 130.1**)
- » Acceptance testing and installation certificates (**Section 130.4**)

ENERGY  
STANDARDS

HOTLINE

Available to help with  
Energy Standards  
(Title 24, Part 6) questions.



EMAIL

[title24@energy.ca.gov](mailto:title24@energy.ca.gov)



CALL

**800-772-3300**  
Toll free in CA

**916-654-5106**  
Outside CA

HOURS

8 a.m. – 12 p.m. and  
1 p.m. – 4:30 p.m.



## Wall Extensions in Low Rise Residential Additions

The 2016 Energy Standards allow for the extension of existing wood-framed walls in additions to retain the dimensions of existing walls. What is considered a wall extension as described in Sections 150.2(a)1Ai and 150.2(a)1Bii?

Figures 2 through 4 are examples of common ways new walls are connected to existing walls.

In Figures 2 and 3, the new wall extends out straight from an existing wall. These are considered wall extensions. The new walls in Figures 2 and 3 are 2x4 framing, and are only required to have R-15 cavity insulation. If the existing wall had 2x6 framing, the new wall would also have 2x6 framing and would require R-19 cavity insulation (not shown).

In Figure 4, the new wall is perpendicular to the existing wall. This is not a wall extension, and is subject to the prescriptive insulation requirements of Section 150.1(c)1B. In most cases, this will require 2x6 framing with both cavity and continuous insulation.

NOTE: The figures show horizontal wall extensions. These requirements are also applicable to vertical wall extensions such as a second floor addition.

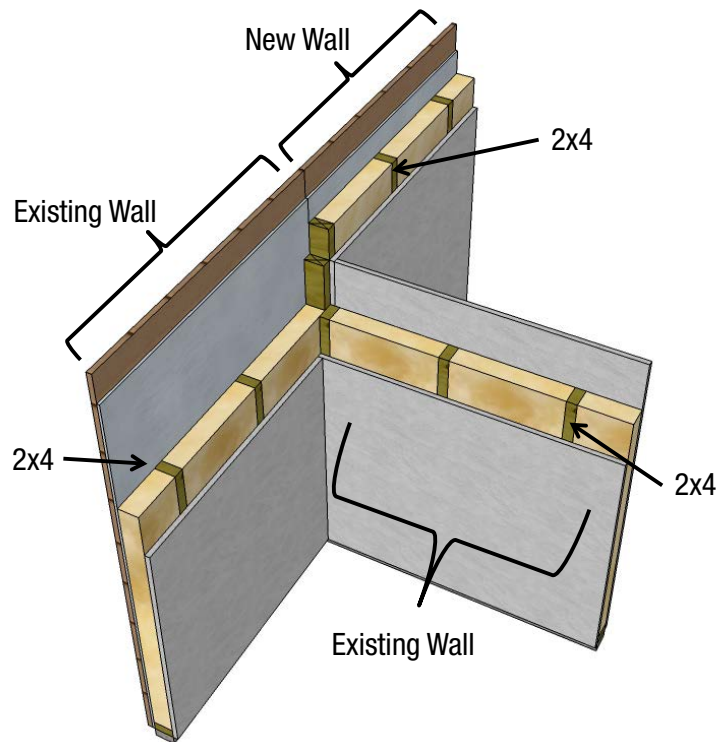


Figure 3 - The new wall extends out straight from one of the existing walls.

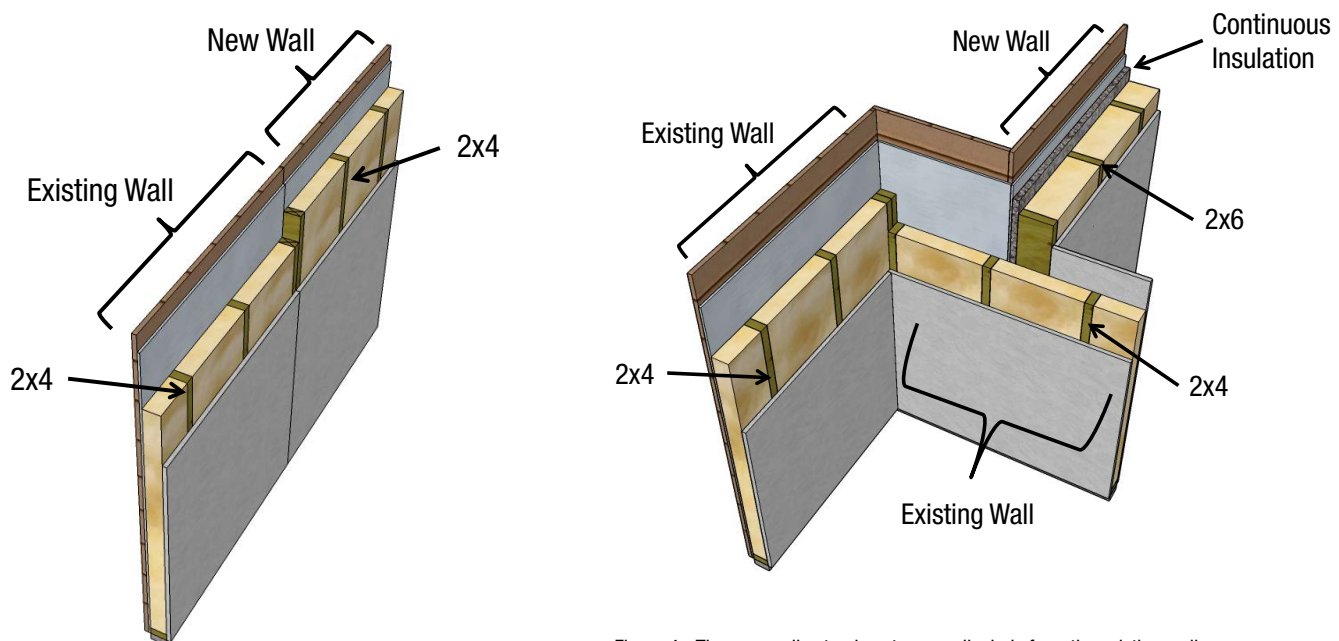


Figure 4 - The new wall extends out perpendicularly from the existing wall.

Figure 2 - The new wall extends out straight from the existing wall.

# Residential Compliance Documents

**Are residential compliance documents always required to be registered with a HERS provider?**

No. All compliance documents must be registered only if HERS verification is required or modeled for compliance credit.

Examples of prescriptive projects that do not require registered compliance documents include:

- » Roof surface replacements
- » Water heater replacements
- » Window replacements
- » Non-ducted wall furnace replacements

**Compliance documents** for these types of projects are available without watermarks.

**Do all residential projects require compliance documents?**

No. **Sections 10-103(a)1C** and **10-103(a)3C** state that enforcement agencies may, at their discretion, choose not to require compliance documents for prescriptive residential alteration projects that do not require HERS verification. Prescriptive additions less than 300 ft<sup>2</sup>, which do not require HERS verification, may also be exempted from submitting compliance documents.

## For More Information

**Home Energy Rating System:**

<http://www.energy.ca.gov/HERS/>

**Acceptance Test Technician**

**Certification Provider Program:**

<http://www.energy.ca.gov/title24/attcp/>

**Approved Compliance Software:**

[http://www.energy.ca.gov/title24/2016standards/2016\\_computer\\_prog\\_list.html](http://www.energy.ca.gov/title24/2016standards/2016_computer_prog_list.html)

**The California Energy Commission welcomes your feedback on Blueprint.**

**Please contact Andrea Bailey at:**

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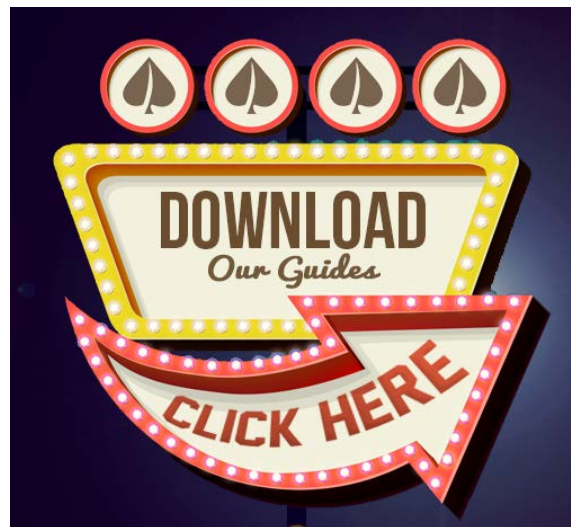
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CEC-400-2017-004



**Happy New Year from Energy Code Ace!**



**Welcome to a New Year, New Code, and New & Improved Site.**  
*Featuring a veritable cornucopia of new offerings to help you decode the new  
2016 Title 24, Part 6 -  
and a great new way to find them all quickly and easily*



Our popular [resources](#) have been updated for the 2016 Standards - and we've added some fantastic Application Guides to the suite. Use our new filters to find the topic and type that fits your needs!

- [Application Guides](#) - **New this year**, these short manuals include compliance requirements and recommendations for implementing Title 24, Part 6 in nonresidential and residential new construction, additions and renovation projects.
- [Fact Sheets](#) - Check out our 28 "quick reference" summaries of key requirements, forms, definitions and resources for implementing Title 24, Part 6.
- [Trigger Sheets](#) – These handy table-format quick references offer component-by-component summaries of sections of Title 24, Part 6 "triggered" based on project scope.
- [Checklists](#) – Our easy-to-use residential and nonresidential checklists for Building Inspectors and Plans Examiners offer step-by-step guidance for plans checks and field inspections.



[Our training](#) courses target a wide range of "hot topic" measures and audience groups, and are provided in a variety of formats to better match your learning needs and schedule. And they are all provided free of charge!

- **Traditional Classroom** - Available through sponsoring utility energy centers or at a location of your request
- **Virtual Classroom** - Delivered online in real-time by an instructor
- **Online Self-Study** - Allows you to train at your convenience
- **Decoding Talks** - Online facilitated discussions with industry professionals
- **On-Demand Video Training** - Shorter online modules, available when you are

Classroom and online training covering the new Standards include the popular *Title 24, Part 6 Essentials* series full-day classes and the shorter courses on *Title 24: Where We're Headed with the 2016 Standards*. The site's library of recorded Decoding Talks includes a number focused on helping industry professionals understand and comply with the 2016 Standards.

Use the filters to find the perfect class to help you "decode" the California building and appliance energy efficiency standards.



Our [suite of free tools](#) has also been updated and improved for the 2016 standards!

- **Navigator Ace**<sup>TM</sup> - Step-by-step guide to the Title 24, Part 6 compliance process
- **Forms Ace**<sup>TM</sup> - A web-based tool that aids in determining which compliance forms are applicable to your specific project
- **Reference Ace**<sup>TM</sup> - Helps you navigate the Standards using key word search capabilities, hyperlinked tables and related sections
- **Installation Ace**<sup>TM</sup> - A "field guide" providing photos and text to assist you in identifying proper installation techniques

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Visit [www.EnergyCodeAce.com](http://www.EnergyCodeAce.com) to find out how we can help you play your cards right by complying with California's building and appliance energy efficiency standards. And while you're there, register so we can keep you updated about our new offerings, and Title 20 and Title 24, Part 6 news.



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